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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Steven H. Kong, et al

THERMALLY DEVELOPABLE IMAGING MATERIALS HAVING BACKSIDE STABILIZERS

Serial No. 10/685,858

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Group Art Unit: 1752

Examiner: CHEA, Thorl

I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Sherryl A Payne
Sherryl A. Payne

November 1, 2005
Date

Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

Sir:

DECLARATION UNDER 37 C.F.R. 1.132

I, Steven H. Kong, declare that:

(1) I am a co-inventor of the invention described and claimed in the present application, along with Kumars Sakizadeh.

(2) I received a Ph.D. degree in physics from the University of Illinois in 1992. In the course of my graduate studies, I was the author or co-author of 4 publications during that research that were published during 1985 to 1994. In addition, I carried out undergraduate research at the California Institute of Technology from 1981 to 1985.

(3) From May 1995 to July 1996, I was employed by 3M Company; from July 1996 to December 1998, I was employed by Imation Corporation; and from December 1998 to the present, I have been employed by Eastman Kodak Company, all in facilities located near St. Paul, Minnesota.

(4) During my employment with 3M Company, Imation Corporation, and Eastman Kodak Company, I have been involved in research and development work in the area of imaging science and materials, and particularly in the research and development of photothermographic materials and components thereof including stabilizers and antifoggant compounds. In the course of that work, I have been an inventor or co-inventor of at least 12 inventions, all of which are the subject of granted U.S. patents, pending U.S. patent applications, or published patent applications in other countries.

(5) In view of this considerable academic and professional technical experience, I can say, with appropriate modesty, that I am a worker having at least ordinary skill in the art to which the present invention pertains, namely the use of certain nitrogen-containing aromatic compounds as backside "shelf-aging fog" stabilizers in the preparation of photothermographic materials.

(6) I am familiar with the Final Office Action mailed September 13, 2005 in the prosecution of the present application, the rejections and art cited therein, and I believe that I understand the Examiner's arguments in support of his rejections of the presently claimed invention.

(7) It is my opinion, not only as a co-inventor but also as one having at least ordinary skill in the art to which the present invention pertains, that the unpatentability rejections are incorrect, particularly as they are based on the teaching in EP 1 186 950 (of which I am a co-inventor) in view of U.S. Patent 4,212,937 (Akashi et al.) and EP 1 096 310 (EP '310).

(8) It is my opinion that the presently claimed invention is not taught or suggested by EP '950, in combination with Akashi et al. and EP '310, because the compounds of Structure V described in EP '950 are not within the scope of the present invention. Additionally, the compounds of Structures V and VII in EP '950 do not teach or suggest that compounds within Structure II of the presently claimed invention would be useful as "shelf-aging fog" stabilizers on the backside of photothermographic materials.

(9) The ability of a photothermographic material to be stored without undergoing changes in sensitometric or physical properties is often referred to as "raw-stock keeping" (RSK) or "shelf stability". The term "shelf-aging fog" refers to the increase in Dmin that is seen in the non-imaged areas when the Dmin after imaging and development of freshly prepared photothermographic materials is compared with the Dmin after imaging and development of materials that have been stored for a period of time. It is caused by degradation or premature reaction of the image-forming and development chemistry during storage and before imaging. It is a particular problem when photothermographic materials are stored under conditions of high humidity and temperature before imaging.

The term "post-processing" instability or "post-processing fog" refers to the increase in Dmin in the non-imaged areas that occurs after imaging and development. If the material is subjected to additional heat after an image has been formed, the additional heat over time can continue to cause development. This can result in an increase in Dmin and a change in color of the imaged area from black to bronze. It is caused by instability of the imaging chemistry after processing.

The two problems are different and have different effects in photothermographic materials. Yet, both problems can be prominent in photothermographic materials and must be addressed to achieve a commercially viable product.

Moreover, there is no certainty that compounds that will behave as "shelf-aging fog" stabilizers will also behave as "post-processing fog" stabilizers. Similarly, there is no certainty that compounds that will behave as "post-processing fog" stabilizers will also behave as "shelf-aging fog" stabilizers. There is too much unpredictability in the imaging chemistry of photothermographic materials to have reasonable expectation that a compound that will behave as one type of stabilizer will also behave as the other type of stabilizer.

(10) As further evidence of patentability of the presently claimed invention and to show the unpredictability described above, I prepared and coated onto a support three formulations, each incorporating a nitrogen-containing aromatic heterocyclic compound as a backside stabilizer (Compounds

NCH-11, NCH-19, and NCH-28). Samples were prepared as essentially described on pages 71-75 of the present Application. I also prepared a comparative sample containing no backside stabilizer. These coating samples did not contain any photothermographic coatings on the front side.

I imagewise exposed strips of commercially available Kodak DRYVIEW® Medical Imaging Film using an infrared laser sensitometer. I thermally developed these samples using a conventional DRYVIEW® Model 2771 processor at 122.5°C for 15 seconds to provide continuous tone wedges with optical densities varying from Dmin to an optical density greater than 3.5. I exposed each strip to approximately 80-100 foot candles (861-1076 lux) of fluorescent light for 24 hours. I then scanned each imaged strip with a densitometer that takes an optical density reading every 2.5 mm and used the data to calculate the initial Dmin and optical density of each step of the wedge for each strip.

I evaluated the effect of the backside stabilizer compounds as backside "post-processing fog" stabilizers for photothermographic materials by interleaving three strips of imaged DRYVIEW® film with three strips of coating containing a backside "post-processing fog" stabilizer compound such that the backside "post-processing fog" stabilizer coating was in contact with the emulsion side (frontside) of the imaged strip of the DRYVIEW® Medical Imaging Film. An additional imaged strip of DRYVIEW® film was placed at the top and bottom of the stack. The results obtained from these coating samples can be correlated to the results that would be obtained if the backside "post-processing fog" stabilizer compounds were coated directly onto the backside of photothermographic materials of this invention.

I stored each stack of imaged films in separate paper envelopes in the dark for 6 months at 120°F (49°C) and 50% Relative Humidity. I then re-scanned each imaged film using the same densitometer. The changes (Δ) in Dmin upon storage are indicative of the "post-processing fog" stabilizing ability of the nitrogen-containing aromatic heterocyclic compounds.

These data, shown in the TABLE below, demonstrate that nitrogen-containing aromatic heterocyclic compounds within the scope of the present invention are generally poor backside "post-processing fog" stabilizers. In fact, samples containing Compounds NCH-11, NCH-19, and NCH-28 exhibit increased Dmin. Nevertheless, these compounds were significantly better in providing stability against "shelf-aging fog". I believe that these experiments indicate the following:

(1) Compounds useful as "shelf-aging fog" stabilizers cannot be used to predict their ability to function as "post-processing fog" stabilizers as described in the cited references,

(2) In order for a compound to function as a "shelf-aging fog" stabilizer it does not have to function as a "post-processing fog" stabilizer, and

(3) The stabilizing imaging chemistry of photothermographic materials is unpredictable such that one skilled in the art would not have reasonable expectation that a compound that will behave as one type of stabilizer will also behave as the other type of stabilizer.

TABLE – Post Processing Print Stability

Compound	**Amount (mg/m^2)**	**ΔD_{min}**
None	0	0.014
NCH-11	14.2	0.025
NCH-19	8.7	0.035
NCH-28	1.8	0.017

(11) That all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true. These statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 10/27/05

Steven Kong
Steven H. Kong